

## **Title**

MINOS

### **Physics Goals**

1. “If no oscillations, then demonstrate this over as large an area of parameter space available to MINOS”
2. If oscillations occur then measure  $\sin^2 2\theta_{13} > 0.01$  at the 90% confidence level

### **Features**

Production of a neutrino beam using the main ring at Fermilab and a hadron decay pipe of 675 m. Neutrino energy 1 to 25 GeV

A near detector that is an elongated octagon 3.8 m high and 4.8 m wide (total weight 0.98 metric kT, 0.1 kT fiducial). 290 m from decay pipe

A far detector at Soudan, 730 km from decay pipe and 710m below the surface. The detector is octagonal, 31 m long and 8m wide. It contains 486 layers of 2.54 cm iron (total weight 5.4 metric kT, 3.3 kT fiducial) magnetized to 1.5 T

Expect 3000 neutrino CC events/kT/yr (no oscillations)

Expect 20 events/spill in near detector

### **Technological Challenges**

Keeping within budget

Cosmic ray 270 Hz in near detector; 1 Hz in far detector

### **LBNL Contribution and Interest**

None

### **Status**

[http://www-numi.fnal.gov/talks/Lehman\\_Jan02.ppt](http://www-numi.fnal.gov/talks/Lehman_Jan02.ppt)

### **Timeline**

Beam into the detector (Fermilab Forecast) 1/2/05

Start operations (DOE Milestone) 9/30/05

Near detector complete and tested (DOE) 3/31/05; (Fermilab) 10/1/04

Far detector complete and tested (DOE) 4/25/04; (Fermilab) 9/9/03

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### **Location**

Fermilab

### **Collaboration**

31 Institutions

194 participants

### **Funding Sources**

DOE

### **Resources, Links, and References**

<http://www-numi.fnal.gov/minwork/minoswk.html>

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